

Listing of Claims

1 Claim 1 (Previously Presented): A method of providing a connection between a first
2 device and a second device contained in a process automation system, said process
3 automation system also containing a host controller designed to control operation of said first
4 device and said second device, wherein each of said first device and said second device is
5 implemented as a separate physical unit from said host controller, said method comprising:
6 establishing said connection between said first device and said second device;
7 storing in a third device a first plurality data elements necessary for re-establishing
8 said connection;
9 receiving from said second device a second data element when said second device is
10 reinitialized, wherein said second data element is contained in said second device after said
11 second device is reinitialized; and
12 reestablishing said connection between said first device and said second device after
13 said reinitialization by modifying at least one parameter value in at least one of said first
14 device and said second device based on said first plurality of data elements and said second
15 data element.

1 Claim 2 (Original): The method of claim 1, wherein said second device contains a
2 plurality of objects providing said connection, wherein said second data element comprises
an index indicating a memory location where one of said plurality of objects is stored.

1 Claim 3 (Original): The method of claim 2, wherein said plurality of objects
2 comprises a link object and a virtual communication relationship (VCR) object, wherein said
3 link object provides a link between said VCR object and a location storing an application data
4 exchanged between said first device and said second device, and said VCR object provides
5 a link to another VCR object in said first device.
6

1 Claim 4 (Original): The method of claim 3, wherein said second device comprises a
2 publisher and said first device comprises a subscriber, said first device and said second device
3 being contained in a control system, said second device containing a second function block
4 to generate said application data and said first device containing a first function block to

5 receive said application data, and wherein said index specifies a memory location where said
6 second function block is located after said second device is reinitialized.

1 Claim 5 (Original): The method of claim 4, wherein said reestablishing comprises
2 modifying a local index field in said link object according to said index.

1 Claim 6 (Original): The method of claim 5, wherein said third device comprises a
2 supervisory control station, said method further comprising maintaining a copy of said link
3 object in said supervisory control station, wherein said modifying comprises changing said
4 local index field in said copy and downloading said copy to said second device.

1 Claim 7 (Original): The method of claim 6, further comprises maintaining in said
2 supervisory control station a catalogue of connections from/to each of said function blocks,
3 wherein said copy is identified according to said catalogue.

1 Claim 8 (Original): The method of claim 7, further comprising modifying a remote
2 index field in a link object contained in said first device.

1 Claim 9 (Original): The method of claim 3, wherein said second device comprises a
2 subscriber and said first device comprises a publisher, said first device and said second device
3 being contained in a control system, said second device containing a second function block
4 to receive said application data, and wherein said index specifies a memory location where
5 said second function block is located after said second device is reinitialized.

1 Claim 10 (Original): The method of claim 3, wherein said device comprises a replaced
2 unit.

1 Claim 11 (Previously Presented): A computer readable medium carrying one or more
2 sequences of instructions for causing a control station to provide a connection between a first
3 device and a second device contained in a process automation system, said process
4 automation system also containing a host controller designed to control operation of said first

5 device and said second device, wherein each of said first device and said second device is
6 implemented as a separate unit from said host controller, wherein execution of said one or
7 more sequences of instructions by one or more processors contained in said control station
8 causes said one or more processors to perform the actions of:

9 storing a first plurality data elements necessary for re-establishing said connection;
10 receiving from said second device a second data element when said second device is
11 reinitialized, wherein said second data element is contained in said second device after said
12 second device is reinitialized; and
13 reestablishing said connection by modifying at least one parameter value in at least
14 one of said first device and said second device based on said first plurality of data elements
15 and said second data element.

1 Claim 12 (Original): The computer readable medium of claim 11, wherein said second
2 device contains a plurality of objects providing said connection, wherein said second data
3 element comprises an index indicating a memory location where one of said plurality of
4 objects is stored.

1 Claim 13 (Original): The computer readable medium of claim 12, wherein said
2 plurality of objects comprises a link object and a virtual communication relationship (VCR)
3 object, wherein said link object provides a link between said VCR object and a location
4 storing an application data exchanged between said first device and said second device, and
5 said VCR object provides a link to another VCR object in said first device.

1 Claim 14 (Original): The computer readable medium of claim 13, wherein said second
2 device comprises a publisher and said first device comprises a subscriber, said first device
3 and said second device being contained in a control system, said second device containing
4 a second function block to generate said application data and said first device containing a
5 first function block to receive said application data, and wherein said index specifies a
6 memory location where said second function block is located after said second device is
7 reinitialized.

1 Claim 15 (Original): The computer readable medium of claim 14, wherein said
2 reestablishing comprises modifying a local index field in said link object according to said
3 index.

1 Claim 16 (Original): The computer readable medium of claim 15, further comprising
2 maintaining a copy of said link object in said control station, wherein said modifying
3 comprises changing said local index field in said copy and downloading said copy to said
4 second device.

1 Claim 17 (Original): The computer readable medium of claim 16, further comprises
2 maintaining in said control station a catalogue of connections from/to each of said function
3 blocks, wherein said copy is identified according to said catalogue.

1 Claim 18 (Original): The computer readable medium of claim 17, further comprising
2 modifying a remote index field in a link object contained in said first device.

1 Claim 19 (Original): The computer readable medium of claim 13, wherein said second
2 device comprises a subscriber and said first device comprises a publisher, said first device
3 and said second device being contained in a control system, said second device containing
4 a second function block to receive said application data, and wherein said index specifies a
5 memory location where said second function block is located after said second device is
6 reinitialized.

1 Claim 20 (Original): The computer readable medium of claim 13, wherein said device
2 comprises a replaced unit.

1 Claim 21 (Previously Presented): A system facilitating a connection to be provided
2 between a first device and a second device, said first device and said second device being
3 contained in a process automation system, said process automation system also containing
4 a host controller designed to control operation of said first device and said second device,

5 wherein each of said first device and said second device is implemented as a separate unit
6 from said host controller, said system comprising:

7 means for establishing said connection between said first device and said second
8 device;

9 means for storing a first plurality data elements necessary for re-establishing said
10 connection;

11 means for receiving from said second device a second data element when said second
12 device is reinitialized, wherein said second data element is contained in said device after said
13 second device is reinitialized; and

14 means for reestablishing said connection between said first device and said second
15 device after said reinitialization by modifying at least one parameter value in at least one of
16 said first device and said second device based on said first plurality of data elements and said
17 second data element.

1 Claim 22 (Original): The system of claim 21, wherein said second device contains a
2 plurality of objects providing said connection, wherein said second data element comprises
3 an index indicating a memory location where one of said plurality of objects is stored.

1 Claim 23 (Original): The system of claim 22, wherein said plurality of objects
2 comprises a link object and a virtual communication relationship (VCR) object, wherein said
3 link object provides a link between said VCR object and a location storing an application data
4 exchanged between said first device and said second device, and said VCR object provides
5 a link to another VCR object in said first device.

1 Claim 24 (Original): The system of claim 23, wherein said second device comprises
2 a publisher and said first device comprises a subscriber, said first device and said second
3 device being contained in a control system, said second device containing a second function
4 block to generate said application data and said first device containing a first function block
5 to receive said application data, and wherein said index specifies a memory location where
6 said second function block is located after said second device is reinitialized.

1 Claim 25 (Original): The system of claim 24, wherein said reestablishing comprises
2 modifying a local index field in said link object according to said index.

1 Claim 26 (Original): The system of claim 25, said system further comprising
2 maintaining a copy of said link object in said supervisory control station, wherein said
3 modifying comprises changing said local index field in said copy and downloading said copy
4 to said second device.

1 Claim 27 (Original): The system of claim 26, further comprises maintaining in said
2 supervisory control station a catalogue of connections from/to each of said function blocks,
3 wherein said copy is identified according to said catalogue.

1 Claim 28 (Original): The system of claim 27, further comprising modifying a remote
2 index field in a link object contained in said first device.

1 Claim 29 (Original): The system of claim 23, wherein said second device comprises
2 a subscriber and said first device comprises a publisher, said first device and said second
3 device being contained in a control system, said second device containing a second function
4 block to receive said application data, and wherein said index specifies a memory location
5 where said second function block is located after said second device is reinitialized.

1 Claim 30 (Original): The system of claim 23, wherein said device comprises a
2 replaced unit.